U.S. Army Topographic Engineering Center (TEC)

Alexandria, VA

Army Geospatial Portable Document Format (GeoPDF) Project

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GeoPDF Overview

- Provides a Standard format for use and exchange of GIS documents with non-GIS users
- A **stand alone file**; no web or data links; image, text, fonts, graphics, customer data, GIS data and metadata are all contained in one file
- Leverages **free** Adobe Reader (ISO standard) multiple languages
- Intuitive Adobe Reader interface - no training required
- **Free** MAP2PDF for Adobe Reader Plug-in to view Lat/Long & MGRS

  [all TerraGo tools have Army Certificates of Networthiness & Special Operations Command has approved plug-in toolbar for NIPR & SIPR use]
- GIS Functionality to measure lines/area, bearings & coordinates
- Significantly smaller data files than traditional GIS formats (COTS or MILSPEC)
- Complies with Adobe's PDF specification

What does a GeoPDF do

With Adobe Reader:

Multiple coordinate displays [default is Lat/Long and MGRS]

Automatic coordinate display

Supports 410 datums and 42 projections (based on GEOTRANS)

Measure area / length with Reader w/o file having to be reader enabled

Importing/exporting geospatial data with Reader

[Comma separated - cvs, XML data format for the interchange of GPS data - gpx, Google Earth storage format – kml, Google Earth compressed storage format – kmz, Shapefile GIS file format – shp/shm]

GPS Tracking

With Adobe Acrobat:

All above

Create GeoPDF manually

GeoMark Enable files for extended use in Reader

Map Assembler for combining multiple GeoPDF files

“…there are about 1 million users of GIS software. There are about 6 billion people. So there are 5.999 billion other people who don’t like using GIS software. We built something for them.”

Michael Jones

Google Earth

Chief Technology Office

Geospatial Solutions

May 2006

GeoPDF Creation

Vector GeoPDF

- GIS data is output directly into GeoPDF format

Raster GeoPDF

- Paper maps are scanned or use existing jpg/tiff files which are then saved in a PDF format and georeferenced
- Convert from GeoTIFF, MrSID, NITF, ADRG and CADRG [coming soon IMG and CIB]

Topographic Line Map (TLM) 1:50,000 scale - 300 dpi

Seoul	312.0	MB	GeoTIFF (uncompressed)
	10.0	MB	MrSid
	9.7	MB	JPEG
	8.8	MB	TIFF/ZIP
	5.0	**MB**	**GeoPDF**

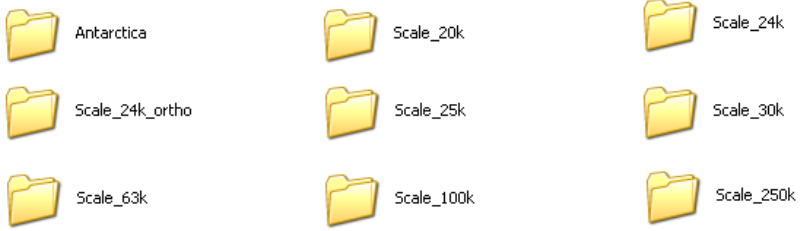
GeoPDF activities complete

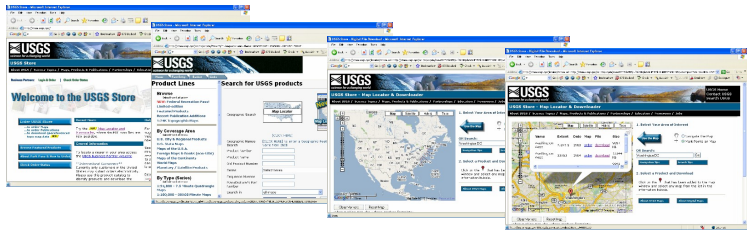
Raster

- NGA Research Center has converted most of their standard products into raster GeoPDF (31,000+)

- Army TEC has packaged most of these maps by country with an easy to use Index Map; now distributes via DVD and has them posted on websites

- TEC converted nearly 60,000 USGS Digital Raster Graphic files from GeoTIFF to GeoPDF. USGS has posted all of them on the USGS store website http://store.usgs.gov.





GeoPDF activities on going

Vector

- Every new and updated map contract NGA signs has a provision that requires a vector GeoPDF be produced as a map sheet is created.

As the vector GeoPDFs are created they replace the raster GeoPDF

- Army produced mission specific products are saved as GeoPDF

Other

All 83 Army Terrain Teams world wide have Map2PDF Adobe plug-in and Map2PDF ESRI extension; EUCOM and PACOM TGDs have tools also

TEC has a ADRG to GeoPDF converter software and will convert its ADRG holding to GeoPDFs.

The IENC (Inland Electronic Navigation Chart) Data Team plans to publish all IENC ~7800 miles of navigable waterways in the USA, in GeoPDF format.

NGA: GeoPDFs in the Geospatial Contingency Packages [GCP] (State Department) and Iraq Country and City Atlases (Marine Corps).

Intel Community: Getting MAP2PDF software to work on a handheld device estimated completion date Spring 2008

International NGA Co-Production partners use GeoPDF

NGA special projects – Summer Olympics, Deployed CENTCOM support

GeoPDF activities - on going II

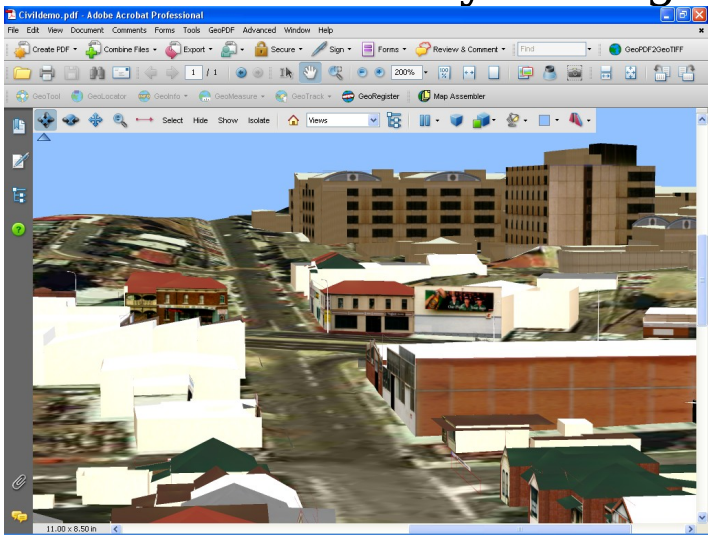
- **NGA Research Center has begun to convert their holdings of native maps into raster GeoPDF**
- **All Army Terrain Teams supplied with:**
  - **GeoPDF2GeoTIFF software extension (to get GeoPDF into GIS software as direct read capability while industry plays catch up):** DoD created TalonView [late ’08] and FalconView 4.2 [mid ‘09] will read/write GeoPDFs. BAE’s Socet GXP 3.0 [out late 08] will write GeoPDFs, ERDAS [Imagine] is working GeoPDF capabilities and TerraGo extension for ESRI ArcGIS to read in GeoPDF [free to those in DoD – see TEC websites for downloading]
  - **Mosaic software extension for MAP2PDF (to create a seamless map background); called MapAssembler**
  - **MAP2PDF suite is also part of the Army’s Digital Topographic Support System (DTSS) build 10.0** [now being delivered]
- **TEC Imagery Library’s online imagery distribution system [iCubed’s DataDoors] exports to GeoPDF**; also GeoEye provides all products in GeoPDF and DigitalGlobe does so for special orders

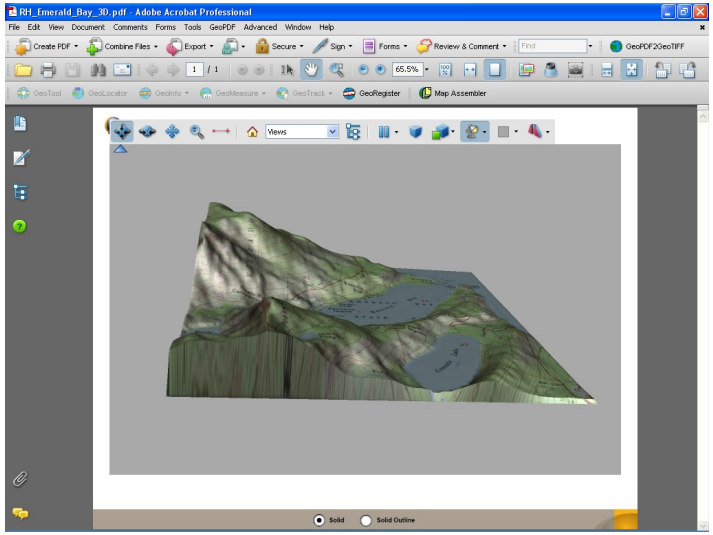
GeoPDF activities - on going III

- **TEC converting their Urban Tactical Planners (UTP), Engineering Route Studies (ERS) and Library holdings of non-NGA products and atlases into GeoPDFs**
- **TEC creating Urban Water Graphics (UWG), Buckeye Map Book (BMB) and Country/Area Overviews into GeoPDFs**

GeoPDF activities - future

- 3D GeoPDF for fly-throughs and elevation data





- Immersive Media's (IM) 360-degree videos inserted into GeoPDFs

The latest news

On June 2nd 2008 Adobe announced that Acrobat and Reader 9 will support geospatially aware PDF or PDF Maps*. The PDF Maps can be read without plug-ins in version 9 and can be created with Adobe Acrobat 9 Pro Extended edition.

*PDF Maps – A new open standard based on the pending patent (which has been withdrawn) of TerraGo Technologies. PDF Maps are not GeoPDFs; GeoPDFs use the TerraGo Tech toolbar to go beyond the simple functionality that comes standard with Adobe 9 but GeoPDFs can be read and use this limited functionality.

In other words: **All GeoPDFs that have been created will "work" in Adobe 9 without the TerraGo plug-in but will still be looking for the plug-in so it can do even more. A GeoPDF in Adobe 9 will show coordinates within both the imbedded Adobe tool and the TerraGo toolbar [if it is loaded].**

The latest news II

ESRI will support the ability to create PDF Maps in version 9.3 without the use of the TerraGo Tech extension

To create a GeoPDF within ArcGIS you would still need the TerraGo extension.

So why would I spend the money to create GeoPDF if PDF Maps are free?

GeoPDFs have more functionality when used with the TerraGo toolbar i.e. MGRS, USNG, automatic coord readout [Adobe tool turns off with many common menu picks], support of Lambert Conformal Conic and Transverse Mercator Projections, measure area and length with Reader (even if file is not reader enabled), importing/exporting geospatial data with Reader, GPS Tracking etc.

The ability to display PDF Maps in ESRI products will come later. As stated before DoD has extension to display GeoPDF ArcGIS

GeoPDF feedback

"...literal lifesaver"..."has revolutionized the way we do business. We get more workable products out to the warfighter"

"So far the DVDs with the map data from TEC has been a huge success. I even passed a few to a soldier on an MTT while waiting for our flight. Folks who don't have access to much data are extremely appreciative when they get something with nothing expected in return."

"That's a pretty awesome product"

"a tremendous asset to my operations"

"...used the geopdf country dvds as m
and printed the sheets all the time!!!
The country dvds are geospatial hero
the war!!!!! "

"data will be of real h

"The GeoPDF's you sent provided us with the following:
- Instant access to much needed mapping data
- Ability to send data over secure net to Commanders
- MGRS capability
- Delivered media (PDF's)
- Size of data (less is better)
- Ease of use for incorporating into presentations

Clear, viewable, aerial photography and topographical maps.

"This is great stuff!"

"They are such great products"

"I'm not a GIS professional; I'm an artilleryman. Recently, I discovered the GeoPDF files.. and thoroughly enjoy them. They make maps easy!"

"Wohooo!"

"The CDs you sent were far

"we have some useful maps now to use."

"these DVDs will be very helpful"

"I think it's a kick azz product... Probably the best product out there for my use..."

"We love the geopdf format.
It's been very popular among our users here in Korea."

"...a huge success an
has gone over very w

"GeoPDF is the way of the future"

"The GeoPDF tool for the reader has proven invaluable"

"It has truly transformed CET operations."

"The CD with maps on it that you gave me is very, very impressive!!! "

GIS/Mapping software 2,000,000 + users*

* Geographic Information Systems and Science by Longley, Goodchild, Maguire, and Rhind

Adobe Reader 600,000,000+ users

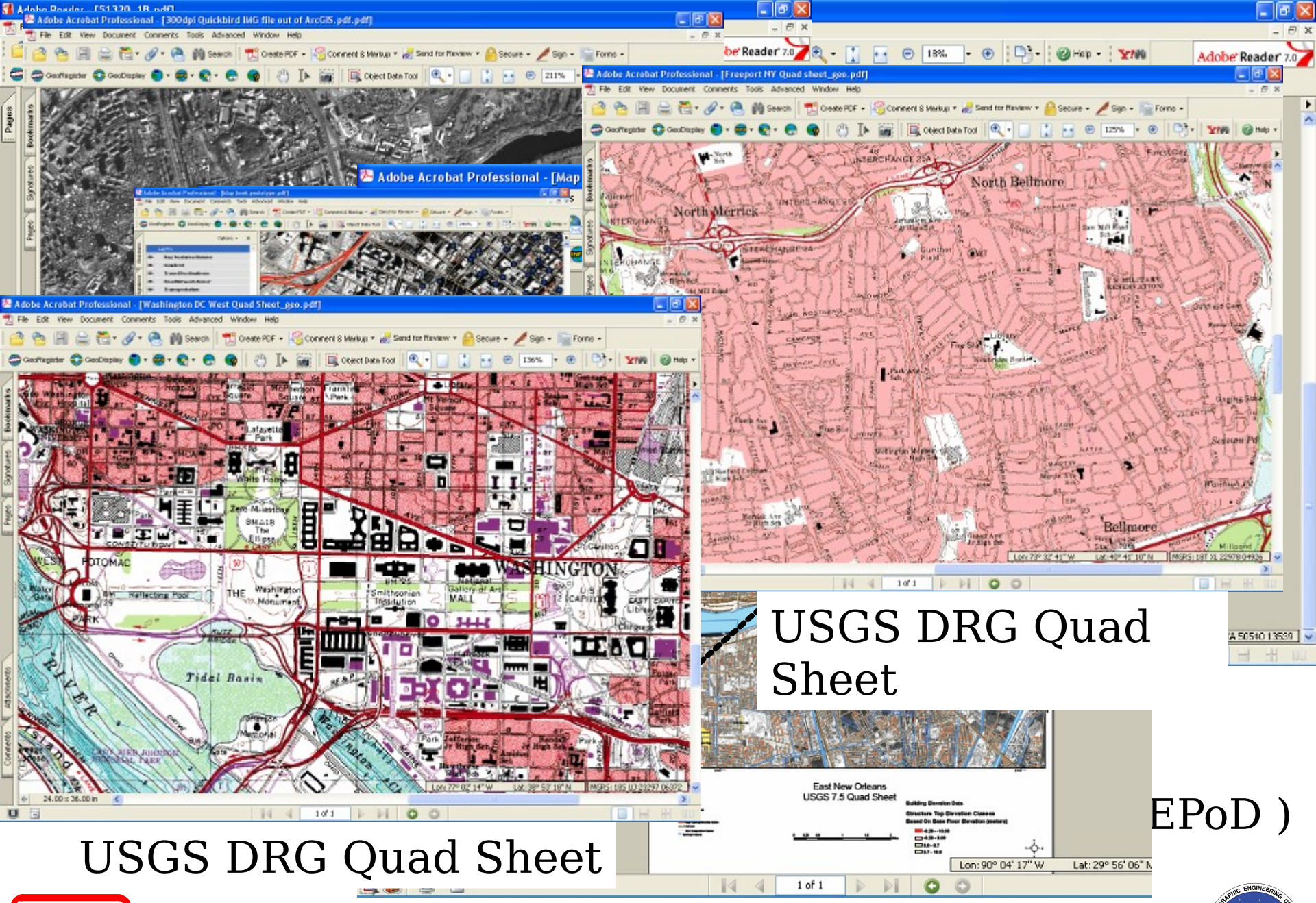
20 disks for Iraq*

*As order from the DLA Map Catalog

2 DVDs for Iraq

CADRG

GeoPDF

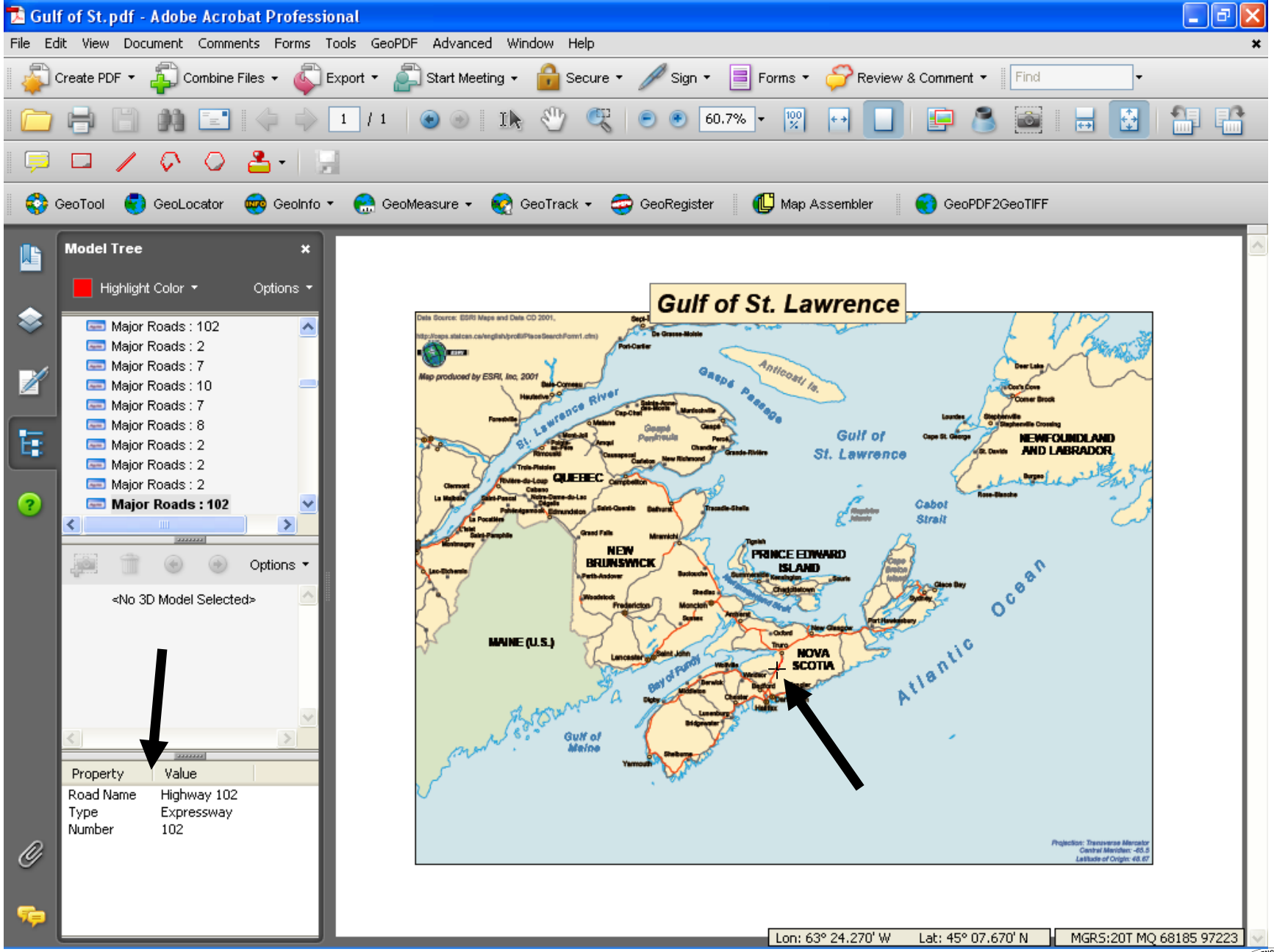


USGS DRG Quad Sheet

USGS DRG Quad Sheet

EPoD)

layered & attributed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File Edit View Document Comments Forms Tools GeoPDF Advanced Window Help
Create PDF Combine Files Export Start Meeting Secure Sign Forms Review & Comment Find
GeoTool GeoLocator GeoInfo GeoMeasure GeoTrack GeoRegister Map Assembler GeoPDF2GeoTIFF
Model Tree
Highlight Color Options
Major Roads : 102
Major Roads : 2
Major Roads : 7
Major Roads : 10
Major Roads : 7
Major Roads : 8
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Major Roads : 2
Major Roads : 2
Major Roads : 102
Options
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Property Value
Road Name Highway 102
Type Expressway
Number 102
Gulf of St. Lawrence
St. Lawrence River
Gaspé Passage
Anticosti Is.
Gulf of St. Lawrence
Cabot Strait
Atlantic Ocean
QUEBEC
NEW BRUNSWICK
PRINCE EDWARD ISLAND
NOVA SCOTIA
NEWFOUNDLAND AND LABRADOR
MAINE (U.S.)
Bay of Fundy
Gulf of Maine
Lon: 63° 24.270' W Lat: 45° 07.670' N MGRS:20T MQ 68185 97223

the software

Software Products

Viewing & Collaboration	- Creation - Desktop	- Creation - Server	GeoPDF Extensions
GeoPDFToolbar [free] viewing capabilities work on either Reader or Acrobat	MAP2PDF for Acrobat	MAP2PDF for ArcGIS Server	GeoMark Enable
	MAP2PDF for ArcGIS		Web Services
	MAP2PDF for DCS		Map Assembler
	MAP2PDF for GeoMedia		GeoImage Import
File Conversion →	MAP2PDF for GeoTIFF		GeoPDF2GeoTIFF

How to obtain GeoPDFs

On DVD:

http://www.tec.army.mil/cmb/index.html

via the Web:

Unclassified PKI web site (CAC card and reader needed):
https://tsunami.tec.army.mil/Products/MapArchive

SIPRNET
www.tec.army.smil.mil/Products/MapArchive

JWICS
www.tec.army.ic.gov/Products/MapArchive

Other GeoPDF contact info

Web:

NGA GeoPDF files can be obatined_

via the SIPRNET at www.nga.smil/products/echart

via the JWICS at www.nga.ic.gov/products/echart

via the NGA Resource Center's Maps Online or Voyager

TerraGo
TECHNOLOGIES
CORPORATE OVERVIEW | PRESS ROOM | CONTACT
HOME
PRODUCTS
INDUSTRIES
SERVICES
DOWNLOAD
SUPPORT
GeoPDF
Maps without boundaries.
FIND OUT MORE
SPOTLIGHT
GeoCollaboration
From emergency situations to everyday business encounters, people need more than just a map. They need to be able to interact with geospatial data and connect with others to share updates from the field. In this article, GeoPDF evangelist Phil Lee shows you how to take mapping data further than ever before with GeoCollaboration
Read the Article
USGS Makes Maps Available Using GeoPDF
Now anyone can access more than 60,000 USGS primary base series quadrangle maps for commercial or consumer use from the USGS online store. All that's needed is Adobe Reader and the free GeoPDF Toolbar: download
Read the Article | Visit the USGS site
GeoPDF
FREE DOWNLOAD
MAP2PDF
BUNDLE
AVAILABLE NOW

TerraGo

es:

vww.terragotech.com

Thank you

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